

AMENDMENTS TO THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) A novel photovoltaic solar cell comprising:
 - at least one absorber layer, and
 - at least one doped window layer having at least two sub-layers, wherein the first sub-window layer is adjacent the absorber layer and forms a desirable junction with the absorber layer and wherein the second sub-window layer is adjacent the first sub-window layer and has high optical transmission;
 - wherein the absorber layer of the photovoltaic cell comprises a thin film silicon (tf-Si) alloy based solar cell including at least one of amorphous silicon (a-Si:H) based solar cell, amorphous silicon germanium ($\text{a-Si}_{(1-x)}\text{Ge}_x\text{:H}$) based solar cell, nanocrystalline silicon (nc-Si:H) based solar cell, microcrystalline silicon ($\mu\text{c-Si:H}$) based solar, polycrystalline silicon (poly-Si:H) based solar cell, or other combinations and mixtures thereof;
 - the first and second sub-window p-type sub-window layers having substantially the same chemical composition but having different bandgaps, being comprised of one or more of thin film silicon based materials including at least one of amorphous silicon, protocrystalline silicon, nanocrystalline silicon, microcrystalline silicon, polycrystalline silicon (poly-Si:H), or other combinations and mixtures thereof;
 - wherein the second sub-window p-type layer has a transparency greater than bandgap wider than the bandgap of the first sub-window p-type layer, and wherein there is a minimal mismatch between the bandgap of the first sub-window p-type layer and the bandgap of the absorber layer that is adjacent to the first sub-window p-layer.

2. - 10. Cancelled

11. (Original) The solar cell of claim 1, further comprising a substrate selected from at least one of: glass, metal or plastic.

12. (Previously Presented) The solar cell of claim 11, further comprising a transparent conductive oxide layer adjacent the second sub-window-layer.

13. Cancelled

14. (Original) The solar cell of claim 1, further comprising a buffer semiconductor layer between the absorber-layer and the first sub-window-layer.

15. - 74. Cancelled

75. (Previously Presented) The solar cell of claim 1, the first sub-window layer being formed by deposition at a first temperature, and the second sub-window being formed by deposition at a second temperature that is lower than the first temperature.

76. (Previously Presented) The solar cell of claim 1, the sub p-layer adjacent to the i-layer being formed after the i-layer is formed.

77. (Currently Amended) ~~The solar cell of claim 14,~~ A novel photovoltaic solar cell comprising:

at least one absorber layer, and

at least one doped window layer having at least two sub-layers, wherein the first sub-window layer is adjacent the absorber layer and forms a desirable junction with the absorber layer and wherein the second sub-window layer is adjacent the first sub-window layer and has high optical transmission;

wherein the absorber layer of the photovoltaic cell comprises a thin film silicon (tf-Si) alloy based solar cell including at least one of amorphous silicon (a-Si:H) based solar cell, amorphous silicon germanium (a-Si_(1-x)Ge_x:H) based solar cell, nanocrystalline silicon (nc-Si:H) based solar cell, microcrystalline silicon (μc-Si:H) based solar, polycrystalline silicon (poly-Si:H) based solar cell, or other combinations and mixtures thereof;

the first and second sub-window p-type layers being comprised of one or more of thin film silicon based materials including at least one of amorphous silicon, protocrystalline silicon, nanocrystalline silicon, microcrystalline silicon, polycrystalline silicon (poly-Si:H), or other combinations and mixtures thereof;

wherein the second sub-window p-type layer has a transparency greater than the first

sub-window p-type layer, and wherein there is a minimal mismatch between the bandgap of the first sub-window p-type layer and the bandgap of the absorber layer that is adjacent to the first sub-window p-layer; and,

wherein the substrate comprises a stainless steel metal, the first and second sub-window layers comprise a-Si:H, the absorber layer comprises a-SiGe:H, and the n-layer comprises a-Si:H.

78. (Previously Presented) The solar cell of claim 77, the first sub-window layer being formed by deposition at a first temperature, and the second sub-window being formed by deposition at a second temperature that is lower than the first temperature.